



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,899	07/12/2001	Paul Wolejko	SAA-0055	2016

23569' 7590 11/01/2006

SQUARE D COMPANY
LEGAL DEPARTMENT - I.P. GROUP
1415 SOUTH ROSELLE ROAD
PALATINE, IL 60067

EXAMINER

CHANG, JUNGWON

ART UNIT PAPER NUMBER

2154

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,899

Applicant(s)

WOLEJKO ET AL.

Examiner

Jungwon Chang

Art Unit

2154

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

FINAL ACTION

1. This Action is in response to Amendment filed on 8/11/06, which has been fully considered.
2. Claims 39-61 are presented for examination.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 52 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim language "output module including a first reflex function and a second reflex function" was not described in the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 52-54, 56, 57, 59 and 60** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth (US 6,073,053), hereinafter Dummermuth in view of Vasko et al. (US 6,909,923), hereinafter Vasko.

7. Dummermuth is cited by the Examiner in a previous Office Action.

8. As for claim 52, Dummermuth discloses a control system comprising:
an input module structured to respond to a condition by transmitting a representative signal (optical sensor 26, Fig. 1.; col. 3, lines 27-48); and
an output module (central processor 12, I/O rack 16, Fig. 1) operably coupled to the input module, the output module including a reflex function (I/O card 18, Fig. 2) structured to produce a state signal (output signal 29, Figs. 1 and 3; col. 3, lines 7-14) in response to receiving the representative signal from the input module, the output module being structured to execute the reflex function (col. 2, lines 19-24).

9. Dummermuth does not specifically disclose without requiring an enablement signal from a controller. However, Vasko discloses without requiring an enablement signal from a controller (col. 8, lines 6-12, "allows direct communication between the input module 14 and the output module 16 without the intervening controller 12 or for systems without controllers 12"). It would have been obvious to one of ordinary skill in

Art Unit: 2154

the art at the time of the invention to modify Dummermuth by without requiring an enablement signal from a controller, in order to direct communication between the input module and the output module, as taught by Vasko (col. 8, lines 6-12).

10. As for claim 53, Dummermuth discloses the control system as defined in claim 52, further comprising the controller operably coupled to the input module and the output module (Figs. 1 and 2).

11. As for claim 54, Dummermuth discloses the control system as defined in claim 53, further comprising a configuration tool operably coupled to the output module, the configuration tool being structured to configure the reflex function (col. 2, lines 29-38; col. 4, lines 16-19).

12. As for claim 56, Dummermuth discloses the control system as defined in claim 52, wherein the reflex function is at least one of a Boolean logic function, a comparison function, a counter function, a timer function, and an edge detection function (col. 2, lines 29-31).

13. As for claim 57, Dummermuth discloses the control system as defined in claim 52, wherein the output module is coupled to the input module by a network (Figs. 1 and 2).

Art Unit: 2154

14. As for claim 59, Dummermuth discloses the control system as defined in claim 52, wherein the first reflex function is specified in an object dictionary (memory 52 and 54, Fig. 2; col. 3, line 65 – col. 4, line 7).

15. As for claim 60, Dummermuth discloses the control system as defined in claim 59, wherein the object dictionary is embedded within a master scanner (central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7).

16. **Claims 39-42, 44, 46, 47, 49, 50 and 55** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dummermuth (US 6,073,053), hereinafter Dummermuth, in view of McLaughlin et al. (US 5,988,847), hereinafter McLaughlin, and Vasko et al. (US 6,909,923), hereinafter Vasko.

17. McLaughlin is cited by the Examiner in a previous Office Action.

18. As for claim 39, Dummermuth discloses a control system comprising:
an input module structured to respond to a condition by transmitting a representative signal (col. 3, lines 27-48; optical sensor 26, Fig. 1); and
an output module (central processor 12, I/O rack 16, Fig. 1) operably coupled to the input module, the output module including *circuitry* (I/O card 18, Fig. 2) configurable with a first reflex function at a first time and a second reflex function at a second time, the first reflex function being structured to produce a state signal

(output signal 29, Figs. 1 and 3; col. 3, lines 7-14), in response to receiving the representative signal from the input module (col. 2, lines 29-31; col. 4, lines 16-19).

19. Although Dummermuth teaches programmable and configurable circuitry, Dummermuth does not explicitly disclose that the circuitry may comprise firmware. It is well-known and obvious to one of ordinary skill in the art that firmware, hardware, and software perform equivalent functions and may be substituted for each other or used in combination, as taught explicitly by McLaughlin (col. 4, line 65 – col. 5, line 8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify McLaughlin by using firmware in order to provide an easily programmable circuit.

Dummermuth does not specifically disclose without requiring an enablement signal from a controller. However, Vasko discloses without requiring an enablement signal from a controller (col. 8, lines 6-12, "allows direct communication between the input module 14 and the output module 16 without the intervening controller 12 or for systems without controllers 12"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by without requiring an enablement signal from a controller, in order to direct communication between the input module and the output module, as taught by Vasko (col. 8, lines 6-12).

20. As for claim 40, Dummermuth discloses a control system as defined in claim 39, wherein:

the first reflex function comprises at least one of a Boolean logic function, a comparison function, a counter function, a timer function, and an edge detection function (col. 2, lines 29-31) and

the second reflex function comprises at least one of a Boolean logic function, a comparison function, a counter function, a timer function, and an edge detection function, wherein the first reflex function is different than the second reflex function (col. 2, lines 29-31).

21. As for claim 41, Dummermuth discloses the control system as defined in claim 39, further comprising a computer based tool to configure the firmware with one of the first reflex function and the second reflex function (col. 2, lines 29-38; col. 4, lines 16-19).

22. As for claim 42, Dummermuth discloses the control system as defined in claim 39, wherein the output module is coupled to the input module by a bus (Fig. 2; col. 3, lines 49-51).

23. As for claim 44, Dummermuth discloses the control system as defined in claim 39, wherein the output module is coupled to the input module by a network (Figs. 1 and 2).

24. As for claim 46, Dummermuth discloses the control system as defined in claim

39, further comprising a master scanner operatively coupled to the input module and the output module (col. 4, lines 13-16).

25. As for claim 47, Dummermuth discloses the control system as defined in claim 39, wherein the master scanner comprises a programmable logic controller (central processor 12, Fig. 2).

26. As for claim 49, Dummermuth discloses the control system as defined in claim 39, wherein the first reflex function is specified in an object dictionary (memory 52 and 54, Fig. 2; col. 3, line 65 – col. 4, line 7).

27. As for claim 50, Dummermuth discloses the control system as defined in claim 39, wherein the object dictionary is embedded within a master scanner (central processor 12, Fig. 2; col. 3, line 65 – col. 4, line 7).

28. As for claim 55, although Dummermuth teaches programmable and configurable circuitry, Dummermuth does not explicitly disclose that the circuitry may comprise firmware. It is well-known and obvious to one of ordinary skill in the art that firmware, hardware, and software perform equivalent functions and may be substituted for each other or used in combination, as taught explicitly by McLaughlin (col. 4, line 65 – col. 5, line 8). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify McLaughlin by using firmware in order to provide an easily

Art Unit: 2154

programmable circuit.

29. **Claims 43, 45, 48, and 51** are rejected under 35 U.S.C. 103(a) as being obvious over Dummermuth, McLaughlin, Vasko, further in view of Edwards et al (US 5,938,754) (hereinafter Edwards).

30. Edwards is cited by the Examiner in a previous Office Action.

31. As for claims 43 and 45, Dummermuth, McLaughlin and Vasko do not specifically teach the use of CANopen protocol. Edwards teaches the use of CANopen protocol in industrial manufacturing applications for detection and correction of transmission errors caused by electromagnetic interference (col. 2, lines 23-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth, McLaughlin and Vasko by using CANopen protocol over either a network or a bus because this would provide an easily configurable system and allow for detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards above.

32. As for claim 48, Dummermuth, McLaughlin and Vasko do not specifically disclose a reflexive control system wherein the master scanner is a field bus coupler. Edwards teaches the use of a field bus and a field bus coupler in an industrial control system for easily configuring a system and for detection and correction of transmission errors

Art Unit: 2154

caused by electromagnetic interference (col. 1, lines 9-22; field bus coupler is inherent for coupling with the field bus). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth, McLaughlin and Vasko by using a field bus coupler as the master scanner in order to employ a CAN network because this would provide the advantages of an easily configurable system and detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards above.

33. As for claim 51, Dummermuth, McLaughlin and Vasko do not specifically disclose assigning first and second addresses to the input and output modules, respectively. Edwards teaches assigning addresses to all devices connected to a network for use in a CANopen network which provides the advantages of easily configuring a system and for detection and correction of transmission errors caused by electromagnetic interference (col. 1, lines 9-22; field bus coupler is inherent for coupling with the field bus). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth, McLaughlin and Vasko by assigning first and second addresses to the input and output modules, respectively, in order to employ a CAN network which has the advantages of an easily configurable system and detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards.

34. **Claims 58 and 61** are rejected under 35 U.S.C. 103(a) as being obvious over Dummermuth and Vasko, in view of Edwards.

35. As for claim 58, Dummermuth and Vasko do not specifically teach the use of CANopen protocol. Edwards teaches the use of CANopen protocol in industrial manufacturing applications for detection and correction of transmission errors caused by electromagnetic interference (col. 2, lines 23-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth and Vasko by using CANopen protocol over either a network or a bus because this would provide an easily configurable system and allow for detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards above.

36. As for claim 61, Dummermuth and Vasko do not specifically disclose assigning first and second addresses to the input and output modules, respectively. Edwards teaches assigning addresses to all devices connected to a network for use in a CANopen network which provides the advantages of easily configuring a system and for detection and correction of transmission errors caused by electromagnetic interference (col. 1, lines 9-22; field bus coupler is inherent for coupling with the field bus). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth and Vasko by assigning first and second addresses to the input and output modules, respectively, in order to employ a CAN network which has the advantages of an easily configurable system and detection and correction of transmission errors caused by electromagnetic interference, as taught by Edwards.

Response to Arguments

37. Applicant's arguments filed on 8/11/06 have been fully considered but they are not persuasive.

(1) Applicant asserts on page 7 of the Remarks that the combination of Dummermuth and Vasko is improper.

The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The examiner finds that, contrary to applicant's argument, there is ample motivation in the references and in the knowledge of one of ordinary skill in the art for making this combination. Dummermuth discloses all elements claimed in claims, except "without requiring an enablement signal from a controller". Vasko is relied upon to teach without requiring an enablement signal from a controller (col. 8, lines 6-12, "allows direct communication between the input module 14 and the output module 16 without the intervening controller 12 or for systems without controllers 12"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Dummermuth by without requiring an enablement signal from a controller, in order to direct communication between the input module and the output module, as taught by Vasko (col. 8, lines 6-12, "***allows direct communication***

between the input module 14 and the output module 16 without the intervening controller 12").

(2) Applicant asserts on page 7 of the Remarks that neither Dummermuth nor Vasko discloses an output module having two reflex functions.

The claim language "first reflex function" and "second reflex function" is not explicitly described or defined in independent claims and specification. Thus, the examiner can broadly interpret that the two reflex functions are the same.

38. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

39. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jungwon Chang whose telephone number is 571-272-

Art Unit: 2154

3960. The examiner can normally be reached on 9:30-6:00 (Monday-Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John A Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 27, 2006



JUNGWON CHANG
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100